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 CONTROL DEVICE FOR THE SAME

Hon. Commissioner of Patents and Trademarks,
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SIR:

CERTIFIED TRANSLATION

I, Kaoru FURUKAWA, am an official translator of the Japanese language into the English language and I hereby certify that the attached comprises an accurate translation into English of Japanese Application No. 8-330439, filed on November 26, 1996.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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[Title of the Invention] INFORMATION SIGNAL TRANSMISSION
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[Name of Document] SPECIFICATION

[Title of the Invention] INFORMATION SIGNAL TRANSMISSION
SYSTEM AND REMOTE CONTROL DEVICE FOR THE SAME

[Claims]

[Claim 1] An information signal transmission system forming a network with a first device connected to a second device for providing a predetermined information signal from one of the first and second devices, comprising recipient detecting means for detecting a recipient of the information signal,

wherein the information signal that has been supplied to the recipient by the first device is continuously supplied to the recipient by the second device, based on the result detected by the recipient detecting means.

[Claim 2] An information signal transmission system according to Claim 1, wherein each of the first and second devices comprises an information signal output unit for outputting the information signal, and wherein the information signal includes information signal collected by predetermined information signal acquisition means.

[Claim 3] An information signal transmission system according to Claim 2, wherein the second device switches the operation of the information signal acquisition means based on the result detected by the recipient detecting means so that the second device continuously provides the recipient

with the information signal that has been provided by the first device.

[Claim 4] An information signal transmission system according to Claim 2, wherein the first device switches the operation of the information signal acquisition means based on the result detected by the recipient detecting means so that the second device continuously provides the recipient with the information signal that has been provided by the first device.

[Claim 5] An information signal transmission system according to Claim 1, wherein the recipient detecting means detects the recipient of the information signal, based on identification information added to a remote control signal.

[Claim 6] An information signal transmission system according to Claim 1, wherein the recipient detecting means detects the recipient of the information signal, based on the operation of a control arranged in the first device and/or the second device.

[Claim 7] An information signal transmission system according to Claim 1, wherein the recipient detecting means comprises:

speech signal acquisition means for acquiring a speech signal of the recipient of the information signal; and
speech signal recognition means for identifying the recipient based on the speech signal, and wherein the

recipient of the information signal is detected based on the recognition result given by the speech signal recognition means.

[Claim 8] An information signal transmission system according to Claim 1, wherein in order to switch from the supply of a video signal by the first device to the supply of the video signal by the second device based on the result detected by the recipient detecting means,

the supply of the video signal by the second device starts after a predetermined duration of time during which the video signals are supplied by both the first and second devices.

[Claim 9] An information signal transmission system according to Claim 8, wherein the information signal is composed of a video signal, and wherein information signal acquisition means holds an image, corresponding to the video signal, as a still image.

[Claim 10] An information signal transmission system according to Claim 1, wherein the information signal is composed of a video signal, and wherein when the information signal transmission system switches from the supply of a video signal by the first device to the supply of a video signal by the second device based on the detected result given by the recipient detecting means, the supply of the video signal by the second device starts after a

predetermined duration of time during which the supply of the video signals by both the first and second devices is suspended.

[Claim 11] An information signal transmission system according to Claim 2, wherein the information signal acquisition means comprises a reproducing device for reproducing a video signal recorded in a predetermined recording medium.

[Claim 12] A remote control device of an information signal transmission system including a network of a plurality of devices for providing a predetermined information signal from each of the devices, wherein the remote control device transmits a remote control signal to which is added an identification code identifying a recipient of the information signal.

[Detailed Description of the Invention]

[0001]

[Technical Field of the Invention]

The present invention relates to an information signal transmission system and a remote control device for the information signal transmission system and finds applications in a system of video-handling devices that are interconnected using IEEE (the Institute of Electrical and Electronics Engineers, Inc.) 1394. The present invention detects a recipient of information, and provides continuous

information signal by switching devices in accordance with the recipient of information. For example, a program that has been enjoyed by a viewer in a living room may be continuously enjoyed by the viewer in a bedroom with a simple operation. The present invention enhances ease of use in this type of network.

[0002]

[Description of the Related Art]

When a diversity of video-handling devices including a television tuner, a monitor device, and an optical disk device are arranged into an audio-visual (AV) system, final output devices are typically arranged in the center of the system with the remaining devices around them mutually connected via dedicated lines.

[0003]

More particularly, when the AV system is constructed of video-handling devices, video sources such as a television tuner and an optical disk device output a video signal and audio signal to a monitor device as a final output device. The monitor device is thus provided with a plurality of video input terminals and a plurality of audio input terminals, through which the video signal and audio signal are supplied by the video and audio sources.

[0004]

A video-handling device such as an optical disk device

having a recording capability is connected to an output terminal of a monitor device or directly to a video source such as a tuner to receive a video signal and an audio signal. In such a connection, the video-handling device transmits the video signal and audio signal via a shielded wire or a coaxial cable to reduce noise ingress.

[0005]

In a camera-integrated VCR that processes a video signal in the form of digital signal, the inputting and outputting of the video signal and audio signal are performed through an interface specified by IEEE1394 Standard.

[0006]

[Problems to be Solved by the Invention]

In such an IEEE1394 interface, one bus is shared by a plurality of devices on a time-division multiplex basis, and the devices are connected in a ring configuration or a star configuration to form a network. The video-handling device is thus easily connected.

[0007]

A network of this sort may be easily constructed in a single home. For example, a video signal reproduced by an optical disk device placed in a living room may be viewed in a monitor device in a bedroom.

[0008]

It would be convenient if a user could continuously watch in the bedroom with an easy operation a program that has been viewed from the optical disk device in the living room.

[0009]

The present invention has been developed in view of the above problem, and it is an object of the present invention to provide an information signal transmission system that provides an information signal such as a continued video signal with devices switched, and a remote control device adapted to such an information signal transmission system.

[0010]

[Means for Solving the Problems]

To achieve the above object, the information signal transmission system of the present invention comprises recipient detecting means for detecting a recipient of an information signal, wherein the information signal that has been supplied to the recipient by a first device is continuously supplied to the recipient by a second device, based on the result detected by the recipient detecting means.

[0011]

A remote control device in the information signal transmission system of the present invention transmits a remote control signal with an identification code

identifying the recipient of the information signal attached to the remote control signal.

[0012]

The recipient of the information signal is detected, and the information signal that has been supplied to the recipient by the first device is continuously supplied to the recipient by the second device, based on the detected result by the recipient detecting means. Even when the recipient moves, the information provided by the first device is continuously provided by the second device.

[0013]

The remote control device of the information signal transmission system of the present invention transmits a remote control signal to which is added an identification code identifying a recipient of the information signal. A device having receiving the remote control signal provides the information signal so that the operation of the entire system is easily switched.

[0014]

[Description of the Embodiments]

Referring to the drawings, the embodiments of the present invention are now discussed.

[0015]

(1) First embodiment

FIG. 1 is a block diagram showing an audio-visual (AV)

system of a first embodiment of the present invention. The AV system includes an optical disk device 2, and monitor devices 3A and 3B which are connected through a bus BUS specified in IEEE1394 to form a network. The operation of the AV system 1 is switched by operating a remote command device 4 or by directly operating each device. The video signal and audio signal reproduced by the optical disk device 2 are monitored on the monitor device 3A in the same room as the optical disk device 2 or on the monitor device 3B in another room.

[0016]

In the optical disk device 2, a video reproducing block 6 under the control of a control block 7 switches the operation thereof to reproduce and output a video signal and audio signal from an optical disk. Under the control of the control block 7, the video output block 8 switches the operation thereof to code output data of the video reproducing block 6 and provide the output thereof to a network interface 9.

[0017]

The control block 7, composed of a microcomputer that controls the optical disk device 2, switches the general operation of the optical disk device 2 in response to the operation of an unshown control arranged on the optical disk device 2 or in response to a control command input by a

communication control block 10.

[0018]

The network interface 9, composed of input/output circuits for performing communication process as specified in IEEE1394, communicates with network interfaces of the devices connected to the bus BUS when the devices are put to an idle state with the optical disk device 2 connected to the bus BUS, and acquires a device address for the optical disk device 2.

[0019]

Each device address is composed of a bus address for identifying each bus connected in a bridge and a node address on each bus. Double addressing for another device is precluded. In this network, buses are connected in a bridge, and a video signal and audio signal are exchanged between buses, and for this reason each bus needs to be identified by the respective bus address.

[0020]

Through communications with other video-handling devices, the network interface 9 acquires a device address that is assigned to none of the other devices, and holds the acquired device address. The network interface 9 monitors the status of the bus BUS, and detects any decoupling action in which any device is decoupled from the bus BUS. Based on the detected status, the network interface 9 newly performs

a device address detection process.

[0021]

With the obtained device address as a reference, the network interface 9 collects data output by the other video-handling devices constituting the network and then outputs it to the communication control block 10. The network interface 9 adds a device command output by the communication control block 10 to send to the other video-handling devices the data output by the communication control block 10 and the data output by the video output block 8.

[0022]

The AV system 1 is thus designed to transmit and receive a diversity of data in packet, and each packet includes, in its header portion, header data followed by an error correcting code for the header data as shown in FIG. 2. Next, a header for a data field comes in, followed by the data field and then an error correcting code for the data field. When a video signal, an audio signal, a control command or the like is sent to each device, or when a device address is obtained, these video signal, audio signal, control command or the like are assigned to the data field of each packet, and the device address of a destination is set in the header of the data field.

[0023]

The network interface 9 monitors the device address set in the header of the data field, and after collecting a packet designating the optical disk device 2, the network interface 9 error-correction processes the data assigned to the data field and then outputs the corrected data to the communication control block 10. In this way the network interface 9 notifies the communication control block 10 of the control command and the device address of the destination, based on the data assigned to the data field. The network interface 9 assigns the video signal and audio signal to the data field and sets the destination device address in the header of the data field, and then sends the video signal and audio signal to the device designated by the device address.

[0024]

A memory 12 holds identification information ID1 of the recipient of the program of the optical disk. The identification information ID is ID1 assigned to the remote command device 4, and in this embodiment, and a user holds a plurality of command devices. The memory 12 records the user who is currently provided with the video signal and audio signal. The memory 12 in an initial state records its default value.

[0025]

A determining block 13 determines whether

identification information ID2 detected by a ID information detector block 14 matches the identification information ID1 stored in the memory 12, and outputs the determination result. The determining block 13 outputs a determination result of match when the memory 12 stores the default value. The determining block 13 thus determines whether the control command input from other video-handling device comes from the recipient of the program of the optical disk.

[0026]

The ID information detector block 14 detects and outputs identification information ID1 and ID2 from the data input supplied from the network interface 9 to the communication control block 10.

[0027]

The communication control block 10 analyzes the data of the data field supplied via the network interface 9 and issues a control command to the control block 7 as necessary. Through data communication with the control block 7, the communication control block 10 sends a diversity of data via the network interface 9 as necessary.

[0028]

More particularly, the communication control block 10 acquires the data of the data field of a packet from the network interface 9 when the packet designating the optical disk device 2 comes in. The communication control block 10

analyzes the data of the data field when the determining block 13 outputs a match as a result of determination. If the data of the data field is a control command requesting a reproduction operation of the optical disk device, the communication control block 10 compares attribute information set in the data field with attribute information of the optical disk device 2 to determine whether connection to a device requesting reproduction is possible.

[0029]

The attribute information indicates attributes of each device. In the case of the optical disk device, the attribute information includes the manufacturer's name of the optical disk device 2, a type code indicative of the type of each device (tuner, monitor device, etc.), and a format of output data (MPEG 1, MPEG2, MPEG4, digital audio interface or the like). The communication control block 10 determines whether connection to the device is possible by determining whether the output data format set in the attribute information matches its own format.

[0030]

If it is determined that connection to the device is possible, the communication control block 10 sets the device address of the device requesting reproduction as a destination device address, issues a response control command, and then controls the control block 7 to reproduce

from an optical disk, sets the same device address in the network interface 9, and then sends a video signal and an audio signal reproduced from the optical disk to the device requesting reproduction.

[0031]

By repeating the above process steps, the communication control block 10 reproduces from the optical disk or temporarily suspends the reproduction process, through data communication with the control block 7 in response to a request from another device.

[0032]

When the determining block 13 gives no match, the communication control block 10 ignores the control command input from another device. To improve ease of use, the optical disk device 2 changes the destination of the video signal and audio signal only when the remote command device 4 to which the identification information ID1 registered in the memory 12 is assigned is operated. If it is determined from the attribute information that connection to the device is difficult, the communication control block 10 notifies so the corresponding device.

[0033]

Although the monitor devices 3A and 3B are identically constructed, both have different device addresses and are installed in different rooms. The monitor device 3A will be

discussed mainly, and the common portion therebetween will be discussed representatively in the discussion of the monitor device 3A.

[0034]

In the monitor device 3A, a display 15 under the control of a control block 16 switches its operation, presenting a video signal input from a video input block 17 and outputting an audio signal also input from the video input block 17. The video input block 17 under the control of the control block 16 switches its operation, receiving the video signal and audio signal from the bus BUS via a network interface 18. The video input block 17 further decodes the video signal and audio signal to present them on the display 15. The monitor device 3A thus monitors the video signal and audio signal reproduced in the optical disk device 2.

[0035]

A remote control receiver 20 receives a remote control signal sent by the remote command device 4, and feeds the received result to the control block 16, a communication control block 19 and an ID information detector block 21.

[0036]

The control block 16, composed of a microcomputer that controls the operation of the monitor device 3A, controls the switching of the general operation of the monitor device

3A in response to an unshown control arranged on the monitor device 3A. The control block 16 detects a control command assigned to the monitor device 3A from the received result, and controls the general operation of the monitor device 3A for switching according to the control command. The control block 16 also switches the general operation of the monitor device 3A in response to a control command input from the communication control block 19.

[0037]

Like the network interface 9 of the optical disk device 2, the network interface 18 gets a device address. The network interface 18 monitors the bus BUS, receives a packet assigned to the monitor device 3A, and outputs data assigned to the data field of the packet to the communication control block 19 and video input block 17. The network interface 18 supplies to the video input block 17 the video signal and audio signal that are destined to the monitor device 3A from the optical disk device 2, and acquires a control command issued to the monitor device 3A from another device.

[0038]

The network interface 18 under the control of the communication control block 19 issues the output data of the communication control block 19 to a device designated by the communication control block 19. In this way, the monitor device 3A issues the control command to another device.

[0039]

An ID input control 22 comprises a plurality of control elements arranged on the monitor device 3A, each element corresponding to its respective identification information ID. In the ID input control 22, the identification information ID by each control element is set to correspond to the identification information ID of the respective remote command device 4. In the monitor device 3A, unshown control elements are operated after the ID input control 22 is selected, and the operation of the control elements is detected by the control block 16. The control block 16 notifies the communication control block 19 of the corresponding control command, and the communication control block 19 in turn adds the identification information corresponding to the control command.

[0040]

The ID information detector block 21 detects the operation of the ID input control 22 and notifies the communication control block 19 of the identification information corresponding the ID input control 22. The ID information detector block 21 detects the identification information added to the remote control signal of the remote command device 4 from the result received by the remote control receiver 20, and outputs the identification information to the communication control block 19.

[0041]

The communication control block 19 analyzes the control command input via the remote control receiver 20, and outputs the control command to the network interface 18 based on the analysis result. The communication control block 19 adds the identification information detected by the ID information detector block 21, and the attribute information and device address of the monitor device 3A, thereby issuing a control command. When a reproduction command of the optical disk device 2 is issued from the remote command device 4, for example, the communication control block 19 controls the control block 16 to feed main power to the monitor device 3A, and adds the identification information, the attribute information and the device address to the reproduction command and then transfers the resulting reproduction command to the optical disk device 2. The identification information and attribute information are analyzed by the optical disk device 2. When a response command is received from the optical disk device 2, the video signal and audio signal the optical disk device 2 sends in succession are supplied to the user.

[0042]

The monitor devices 3A and 3B constitute respectively a first and second device, each of which provides the video signal and the audio signal constituting information signal

to the user.

[0043]

The remote command device 4 holds its own assigned identification information ID in an ID information holder block 26. A control block 27 drives a transmitter block 29 in response to the operation of a control 28, thereby transmitting a remote control signal to the monitor device 3A, for example. The control block 27 adds the identification information held by the ID information holder block 26 to the control command borne by the remote control signal and then transmits the control command.

[0044]

The remote command device 4 and the ID information detector block 14 of the optical disk device 2 constitute recipient detecting means for detecting a recipient of the video signal and audio signal reproduced by the optical disk device as video signal acquisition means. Furthermore, the ID input control 22 and the ID information detector block 14 of the optical disk device 2 constitute the recipient detecting means for detecting the recipient of the video signal and audio signal.

[0045]

In the AV system 1 thus constructed (FIG. 1), the optical disk device 2 and other devices are connected to the bus BUS and the system is powered for idling, and the

network interfaces 9 and 18 interrogate the bus BUS for the device addresses of the devices connected thereto, and register any device address, if unregistered in the bus BUS, to the respective device. The network interfaces 9 and 18 monitor the status of the bus BUS, and re-register the device addresses when the connection of the bus BUS is modified.

[0046]

When a user switches the optical disk device 2 for power on by manipulating a control on the remote command device 4 with the device address thus registered in step SP1 as shown in FIG. 3, the remote command device 4 proceeds to step SP2, where the remote command device 4 adds the identification information to the corresponding control command and transmits them as a remote control signal.

[0047]

In step SP3, the remote control signal is received by the remote control receiver 20 of the monitor device 3A placed in the same room as the remote command device 4, and the identification information ID is detected by the ID information detector block 21. With the optical disk device switched for power on, the control command borne by the remote control signal is acquired by the communication control block 19. In step SP4, the communication control block 19 controls the control block 16 to switch the monitor

device 3A for main power on.

[0048]

In step SP5, the identification information detected by the ID information detector block 21, and the attribute information and device address of the monitor device 3A are added to the control command, and these data are assigned to the data field, and the device address of the optical disk device is assigned to the destination address before being sent to the bus BUS. In this way the control command received by the remote control receiver 20 is transferred to the optical disk device 2.

[0049]

In step SP6, the network interface 9 of the optical disk device 2 acquires the packet to which the control command is assigned, and the control command, the attribute information and the device address assigned to the data field are input to the communication control block 10. As shown in FIG. 4, the identification information ID out of these data is detected by the ID information detector block 14 in step SP7.

[0050]

The determining block 13 determines in step SP8 whether the identification information ID matches the identification information stored in the memory 12. In the initial state, a match is obtained according to the default value set in

the memory 12. In step SP9, the identification information ID1 is stored in the memory 12.

[0051]

To determine whether the optical disk device 2 is connectable to the monitor device 3A, it is determined in step SP10 whether the attribute information of the monitor device 3A matches the attribute information of the optical disk device 2. When it is determined that both are connectable to each other, the response command is sent to the monitor device 3A in step SP11.

[0052]

The monitor device 3A receives the response command in step SP12, and the optical disk device 2 notifies the monitor device 3A that the video signal and audio signal will be transferred to the monitor device 3A. In step SP13, the communication control block 10 controls the control block 7 to switch the optical disk device 2 for main power on, and in step SP14, the video reproducing block 6 starts reproduction of the optical disk.

[0053]

Referring to FIG. 5, when the reproduction of the optical disk starts in this way, the network interface 9 sends the reproduced video signal and audio signal in step SP15, while the monitor device 3A starts receiving the sent video signal and audio signal in step SP16 to present them

on the display 15.

[0054]

With the reproduction of the optical disk starting, the user operates a suspension control on the remote command device 4 in step SP17. In step SP18, the remote command device 4 sends the control command to which the identification information is added.

[0055]

When the user is present in the same room where the monitor device 3A is placed, the monitor device 3A receives the remote control signal in step SP19. The device address and the attribute information are added to the control command of the remote control signal in step SP20 and the resulting signal is sent to the optical disk device 2.

[0056]

In step SP21, the control command is acquired by the communication control block 19 of the optical disk device 2, and is then input to the communication control block 10 of the optical disk device 2. The ID information detector block 14 detects the identification information ID2 from the control command in step SP22.

[0057]

The determining block 13 determines in step SP23 of FIG. 6 whether the detected identification information ID2 matches the identification information ID1 stored in the

memory 12. If it is determined that both match, the communication control block 10 issues a response command to the monitor device 3A in step SP24, and the reproduction of the optical disk is temporarily suspended in step SP25.

[0058]

In the AV system 1, once one individual starts the use of the system, the operation of the system is not interfered with by some one else, and thus the ease of use is accordingly assured.

[0059]

The response command is fed to the communication control block 19 via the network interface 18 of the monitor device 3A in step SP26, and the main power of the monitor device 3A is switched off in response to the response command in step SP27.

[0060]

With the above setting, if the user goes to a bedroom where the monitor device 3B is placed and operates the remote command device 4 in step SP28, the control command with the identification information added thereto is sent by the remote command device 4 in step SP29. The control command is received by the monitor device 3B in the bedroom.

[0061]

The monitor device 3B is switched for main power on by the control block 16 in response to the control command in

step SP31. The communication control block 19 adds to the control command the attribute information and device address of the monitor device 3B and sends them to the optical disk device 2 in step SP32.

[0062]

The control command is acquired by the optical disk device 2 in step SP33, and is then input to the communication control block 10 of the optical disk device 2. The ID information detector block 14 detects the identification information ID2 from the control command in step SP34.

[0063]

The determining block 13 determines in step SP35 whether the identification information ID2 matches the identification information ID1 stored in the memory 12. If a match is obtained, the communication control block 10 analyzes the attribute information of the control command in step SP36 to determine whether the optical disk device 2 is connectable to the monitor device 3B to which the control command is transferred.

[0064]

If it is determined that both are connectable to each other, the communication control block 10 issues a response command to the monitor device 3B in step SP37, and the response command is acquired by the monitor device 3B in

step SP38. The optical disk device 2 notifies the monitor device 3A that the video signal and audio signal will be transferred to the monitor device 3B before the video signal and audio signal are actually transferred in step SP39. When the signal transfer starts, the suspension of the optical disk is released.

[0065]

The monitor device 3B starts receiving the video signal and audio signal in step SP40. In the AV system 1, the video signal and audio signal reproduced from the optical disk device 2 are continuously enjoyed with the monitor device 3A switched to the monitor device 3B by the simple operation performed on the remote command device 4.

[0066]

Instead the remote command device 4, the ID input controls 22 arranged on the monitor devices 3A and 3B may be used. By operating the ID input controls 22 for power on the monitor devices 3A and 3B, for example, the control command with the identification information ID added thereto is generated by the control block 16 and communication control block 19 instead of the control command from the remote command device 4, and the generated control command is then transferred to the optical disk device 2.

[0067]

When the remote command device 4 is left and forgotten

somewhere, the ID input control 22 may be operated to allow the video signal and audio signal reproduced from the optical disk device 2 to be switchably and continuously viewed on both the monitor devices 3A and 3B.

[0068]

Upon receiving a reproduction end control command, the communication control block 10 of the optical disk device 2 determines that the supply of the video signal and audio signal to the destination device, to which the video signal and audio signal have been supplied, is completed and the communication control block 10 returns the content of the memory 12 to its default value. Another user is now permitted to use the system.

[0069]

With the above arrangement, the identification information is assigned to the remote command device 4, and the video signal and audio signal from the optical disk device 2 are switchably supplied to the monitor devices 3A and 3B with the identification information as a reference. By the simple operation on the remote command device 4 carried, a particular user continuously watches on the monitor device 3B the video signal and audio signal that have been provided on the monitor device 3A. The user thus enjoys the ease of use of the AV system 1.

[0070]

Through the operation of the ID input controls 22 arranged on the monitor devices 3A and 3B, the control command with the identification information added thereto is issued, and with the identification information as a reference, the video signal and audio signal are switchably supplied to the monitor devices 3A and 3B from the optical disk device 2. By the simple operation on the ID input controls 22, the particular user continuously watches on the monitor device 3B the video signal and audio signal that have been provided on the monitor device 3A. The user again enjoys the ease of use of the AV system 1.

[0071]

(2) Second embodiment

FIG. 8 is a block diagram showing an AV system of a second embodiment of the present invention. The AV system 40 includes an optical disk device 41, and monitor devices 42A and 42B which are connected through the bus BUS specified in IEEE1394 to form a network. The operation of the AV system 40 is switched by operating a remote command device 43 or by directly operating each device. In FIG. 8, elements identical to those in the first embodiment with reference to FIG. 1 are designated with the same reference numerals, and the description thereof is not repeated.

[0072]

In the AV system 40, the remote command device 43

includes ID input controls 44A, 44B,..., and in response to the operation of each of the ID input controls 44A, 44B,..., corresponding ID information holder blocks 45A, 45B,... send identification information IDA, IDB,... The ID information holder blocks 45A, 45B,... are arranged into a memory and register a plural pieces of identification information so that the corresponding identification information is accessed by the operation of the respective controls 44A, 44B,...

[0073]

When the control 28 is operated, a control block 46 adds, to the control command corresponding to the control 28, the identification information output by the ID information holder blocks 45A, 45B,... to generate a remote control signal, and outputs the remote control signal via the transmitter block 29. In the AV system 40, the video signal and audio signal are continuously enjoyed on the monitor devices 42A and 42B, by the selection operation of the controls 44A, 44B,... without the need for carrying the remote command device 43.

[0074]

In this embodiment, the optical disk device 41 is a simplified version of the optical disk device 2 in the first embodiment, namely the optical disk device 2 without the ID information detector block 14, memory 12, and determining

block 13. A communication control block 49 analyzes the attribute information of the control command input through the bus BUS to determine whether the connection to the device is possible. After issuing a response command, the communication control block 49 switches the operation of the optical disk device 41.

[0075]

Each of the monitor devices 42A and 42B is provided with an ID information detector block 50, a memory 51, and a determining block 52. The determination of the information destination from the identification information, performed by the optical disk device 2 in the first embodiment, is performed by the monitor devices 42A and 42B in the AV system 40. Based on the determination result, the operation of the optical disk device 2 is switched so that the reproduced signal that has been monitored on the monitor device 42A is continuously monitored on the monitor device 42B.

[0076]

The ID information detector block 50 in the monitor device 42A has a combination of the ID information detector block 21 in the monitor device 3A and the ID information detector block 14 in the optical disk device 2. More particularly, the ID information detector block 50 detects identification information from the result received by the

remote control receiver 20, and outputs it to a communication control block 54, and generates identification information in response to the operation of the ID input control 22 and outputs the identification information to a communication control block 54. The ID information detector block 50 detects the identification information added to the control command acquired via the bus BUS.

[0077]

The memory 51 holds the identification information, and the entire operation is switched based on the identification information stored in the memory 51 as a reference. The determining block 52 determines a match by comparing the identification information stored in the memory 51 with the identification information detected by the ID information detector block 50, and the determination result is output to the communication control block 54.

[0078]

When the communication control block 54 receives a control command via the bus BUS in the course of processing the video signal and audio signal output by the optical disk device 41, the communication control block 54 switches the operation of the device in response to the control command only when a match results from the determination process by the determining block 52. When a control command is input via the remote control receiver 20 during the operation of

the device, or when the controls are directly operated, the communication control block 54 switches the operation of the device in response to the control command or the operation of the controls only when a match results from the determination process by the determining block 52.

[0079]

When a control command is input with main power switched off or when the control is separately operated with main power switched off, the corresponding identification information is registered in the memory 51, and the operation of the device is switched in response to the control command or the operation of the control.

[0080]

In the AV system 40, the reproduction of the optical disk starts with the monitor device 42A powered on, the operation of the monitor device 42A is suspended on condition that the same identification information is input, and the operation of the monitor device 42B is started so that the program that has been presented on the monitor device 42A is continuously presented on the monitor device 42B.

[0081]

According to the arrangement shown in FIG. 8, the same advantage as the first embodiment will be provided if the single remote command device 43 inputs selectively the

identification information.

[0082]

The same advantage as in the first embodiment will be provided even if the identification information is determined in the monitor devices 42A and 42B instead of in the optical disk device 2.

[0083]

(3) Other embodiments

In the above embodiments, each remote command device is assigned respective identification number, or a single remote command device is used to selectively input a plural numbers of identification information. The present invention is not limited to these embodiments.

Identification information is registered in an IC card, and the IC card is set in a remote command device or a video-handling device to add the identification information to a diversity of control commands.

[0084]

Instead of the IC card, a control command is generated based on the result from a speech recognition and the identification information is added to the control command as shown in FIG. 9. More particularly, a speech recognition block 61 recognizes the voice of a user picked up by a microphone 62, and the speech recognition result is sent to a control block 63 in a remote control device 60. The

control block 63 generates a control command based on the speech recognition result, and selects the identification information of the user from a plural pieces of identification information stored in an ID information holder block 64. The control block 63 adds the identification information thus selected to the generated command, and sends the resulting command from a transmitter block 26. This arrangement provides the same effect as that of the preceding embodiments.

[0085]

In the above embodiments, the operation of the optical disk device is temporarily suspended when the destination of the video signal and audio signal is switched between the monitor devices. Alternatively, the process of temporary suspension is may be skipped.

[0086]

In the above embodiments, the operation of one monitor device is forced to stop before the other monitor device is activated when the destination of the video signal and audio signal is switched between the monitor devices.

Alternatively, the other monitor is operated to present the video signal and audio signal as necessary so that both monitor devices present an identical still image, and then the one monitor device that has been viewed may be powered down. If the second embodiment incorporates this method,

the one monitor may be powered down under the control of the other monitor device.

[0087]

In the above embodiments, the monitor device that is continuously viewed is independently powered up.

Alternatively, the monitor device that is continuously viewed is powered up under the control of the monitor device that will be switched off, when switching is individually performed on both monitor devices with the destination beforehand known.

[0088]

In the above embodiments, the two monitor devices are alternately switched on for presenting the video signal and audio signal output from the single optical disk device.

The present invention finds applications not only in such a system but also an AV system constructed of a diversity of devices. For example, a system may be constructed of a plurality of interconnected television receivers, each including a tuner and a monitor device. To continuously watch the same program with the television receivers switched, data communications are required among television receivers in connection with information with identification information as a reference, for example, about a receiver channel that has been received.

[0089]

In the above embodiments, the devices are interconnected using IEEE1394 interface in the AV system that incorporates the present invention. The present invention is not limited to such a system. The present invention finds applications in a system that may be constructed of compact disk player, amplifiers, loudspeakers using a diversity of serial interfaces or parallel interfaces, and further in a variety of wire or wireless communication networks.

[0090]

[Advantages]

According to the present invention, the recipient of information is detected referring to the identification information set in the remote command device, and the continued information signal is supplied to the recipient with the devices switched. With a simple operation, a user who has watched a program in a living room, for example, can continuously enjoy the program in a bedroom. The present invention thus offers improved ease of use in this type of network.

[Brief Description of the Drawings]

[Fig. 1]

FIG. 1 is a block diagram showing an audio-visual (AV) system of a first embodiment of the present invention.

[Fig. 2]

FIG. 2 is a diagram showing a packet for use in the AV system of FIG. 1.

[Fig. 3]

FIG. 3 is a timing diagram illustrating the operation of the AV system of FIG. 1.

[Fig. 4]

FIG. 4 is a continuation of the timing diagram of FIG. 3.

[Fig. 5]

FIG. 5 is a continuation of the timing diagram of FIG. 4.

[Fig. 6]

FIG. 6 is a continuation of the timing diagram of FIG. 5.

[Fig. 7]

FIG. 7 is a continuation of the timing diagram of FIG. 6.

[Fig. 8]

FIG. 8 is a block diagram showing an AV system of a second embodiment of the present invention.

[Fig. 9]

FIG. 9 is a block diagram showing an AV system of another embodiment of the present invention.

[Reference Numerals]

1 and 40... AV systems, 2 and 41... optical disk

devices, 3A, 3B, 42A, and 42B... monitor devices, 4 and 60...
remote command devices, 7, 16, 27, 46 and 62... control
blocks, 9 and 18... network interfaces, 10 and 19...
communication control blocks, 12 and 51... memories, 13 and
52... determining blocks, 14, 21, and 50... identification
information detector blocks, 22... ID input control, 26, 45A,
45B, and 64... identification information holder blocks,
61... speech recognition block

[Name of Document] ABSTRACT

[Abstract]

[Object] An information signal transmission system and a remote control device for such a system for allowing a viewer to continuously watch, for example, in a bedroom a program the viewer has watched in a living room.

[Solving Means] In accordance with the present invention, a recipient of information is detected referring to identification information ID set in a remote command device 4, and monitor devices 3A and 3B are alternately switched for continuously providing the viewer with an information signal.

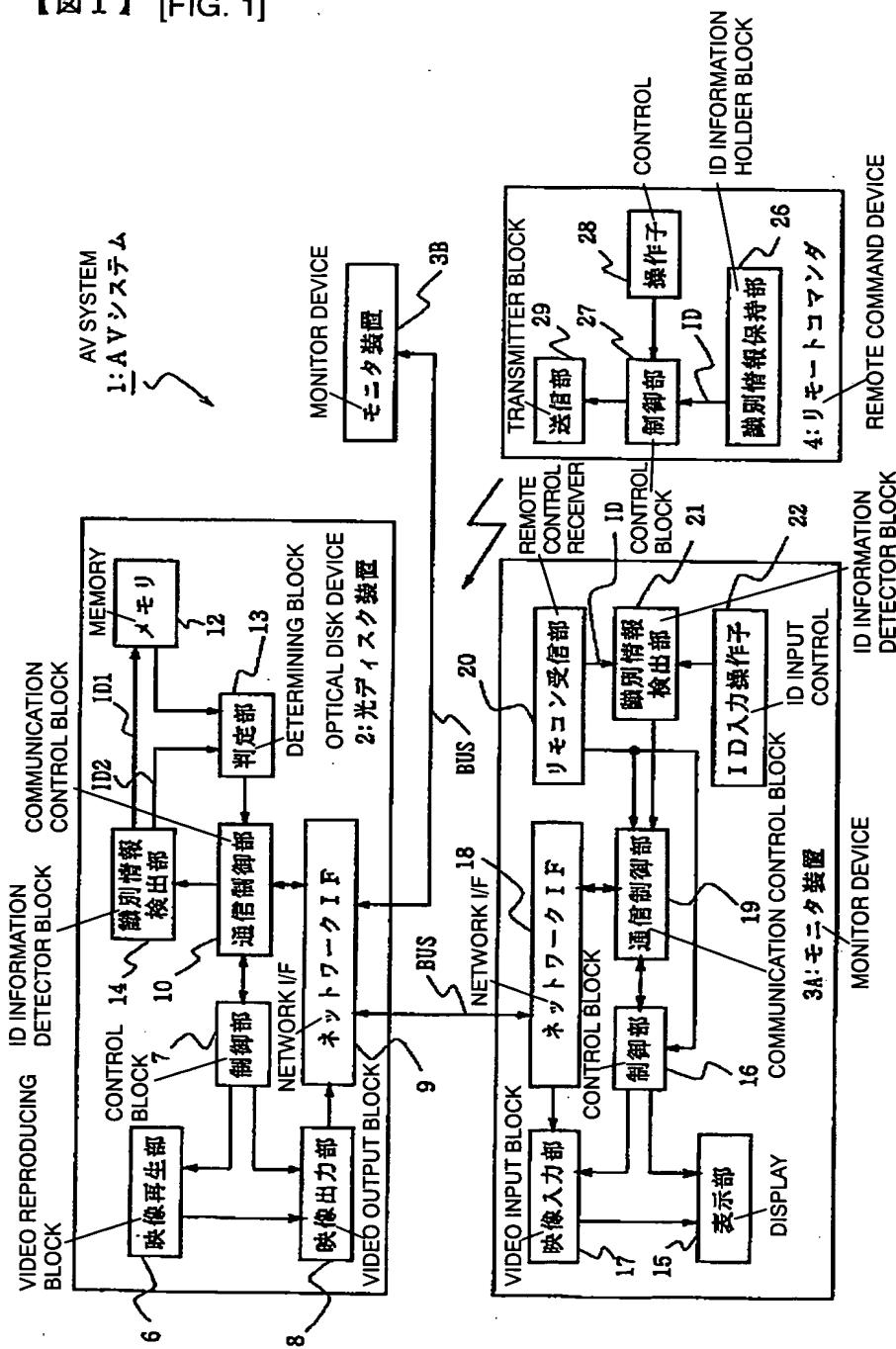
[Selected Figure] Fig. 1



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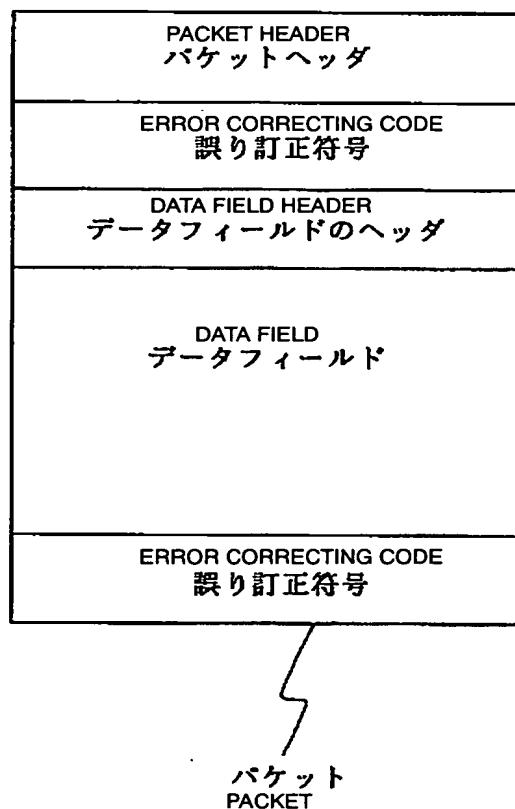
【図1】 [FIG. 1]



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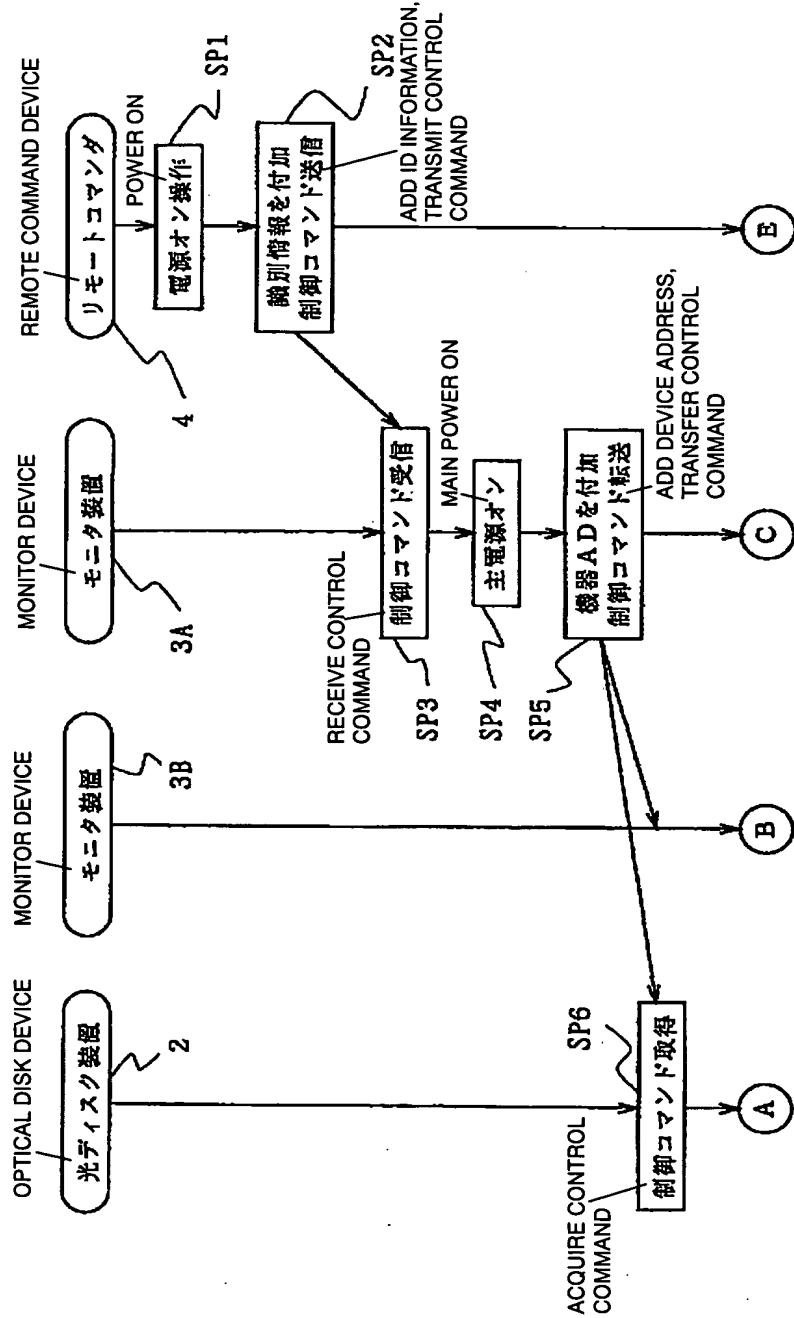
【図2】 [FIG. 2]



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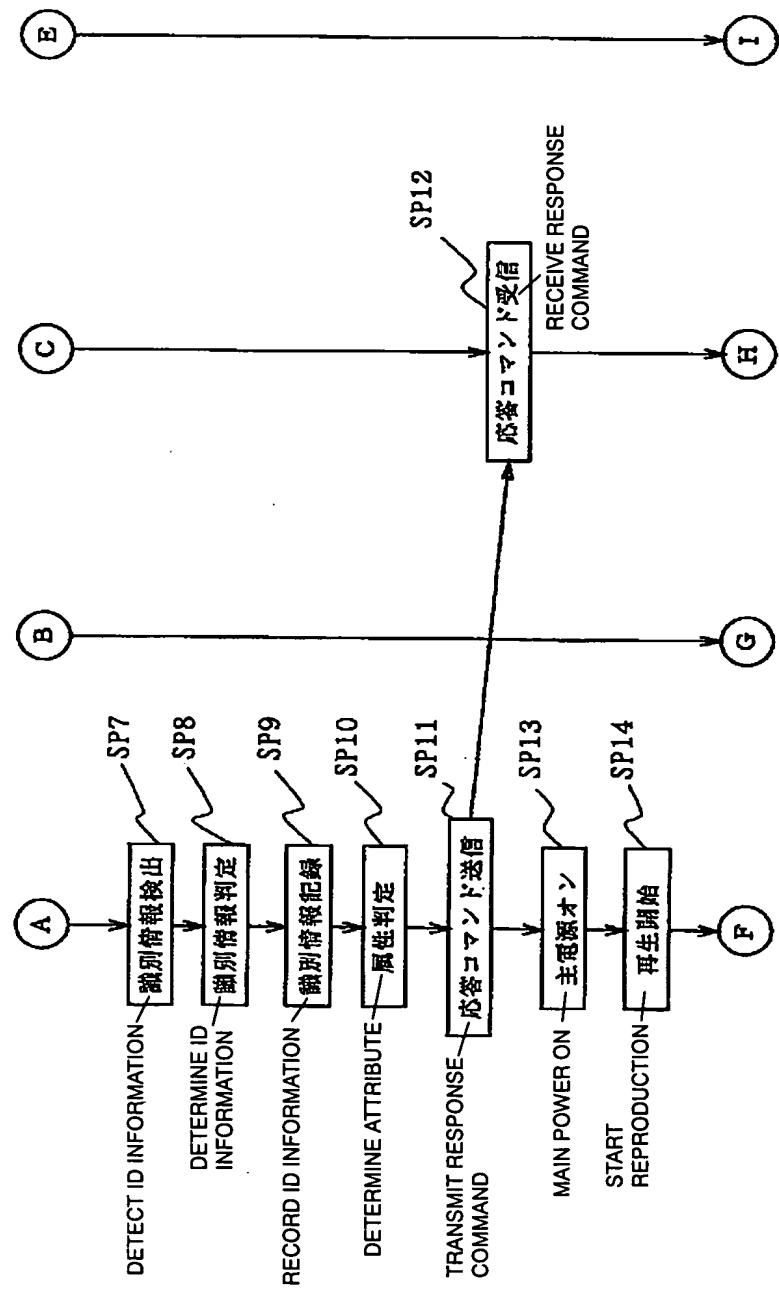
【図3】 [FIG. 3]



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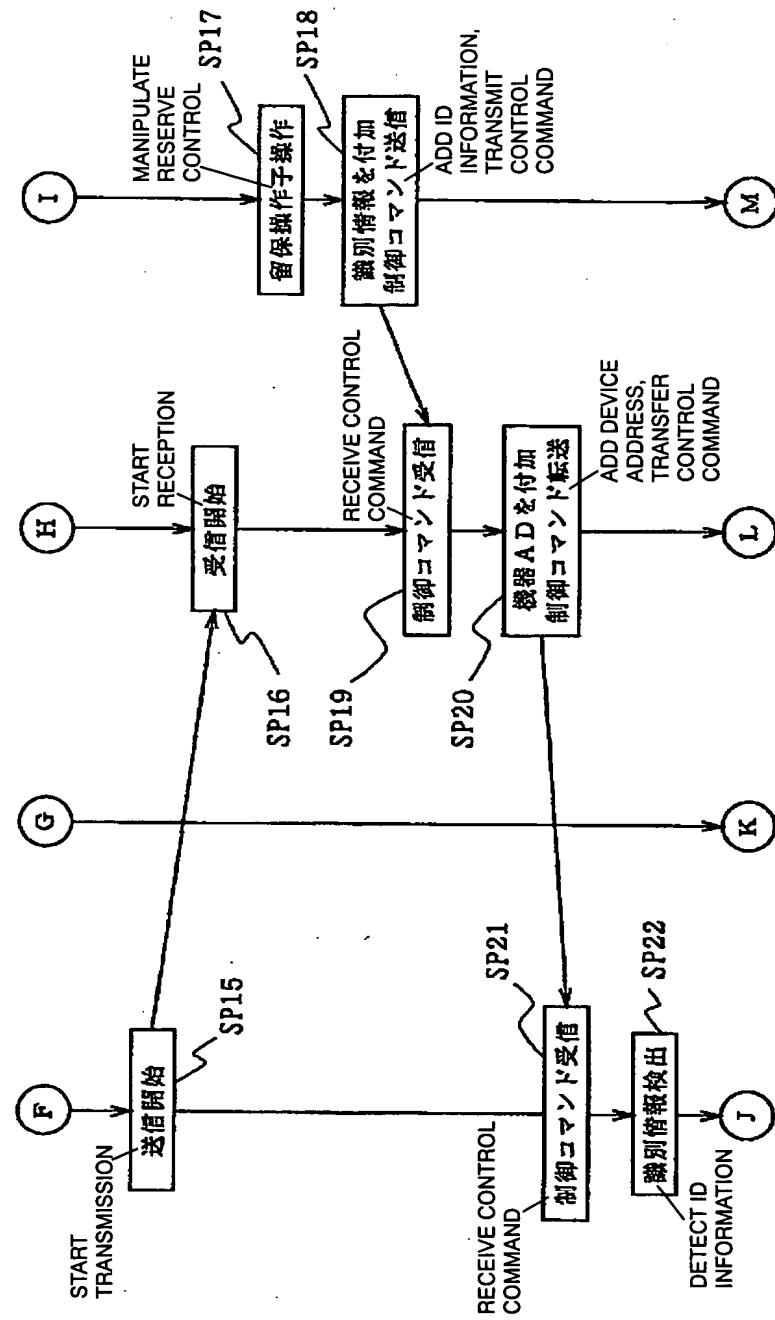
【図 4】 [FIG. 4]



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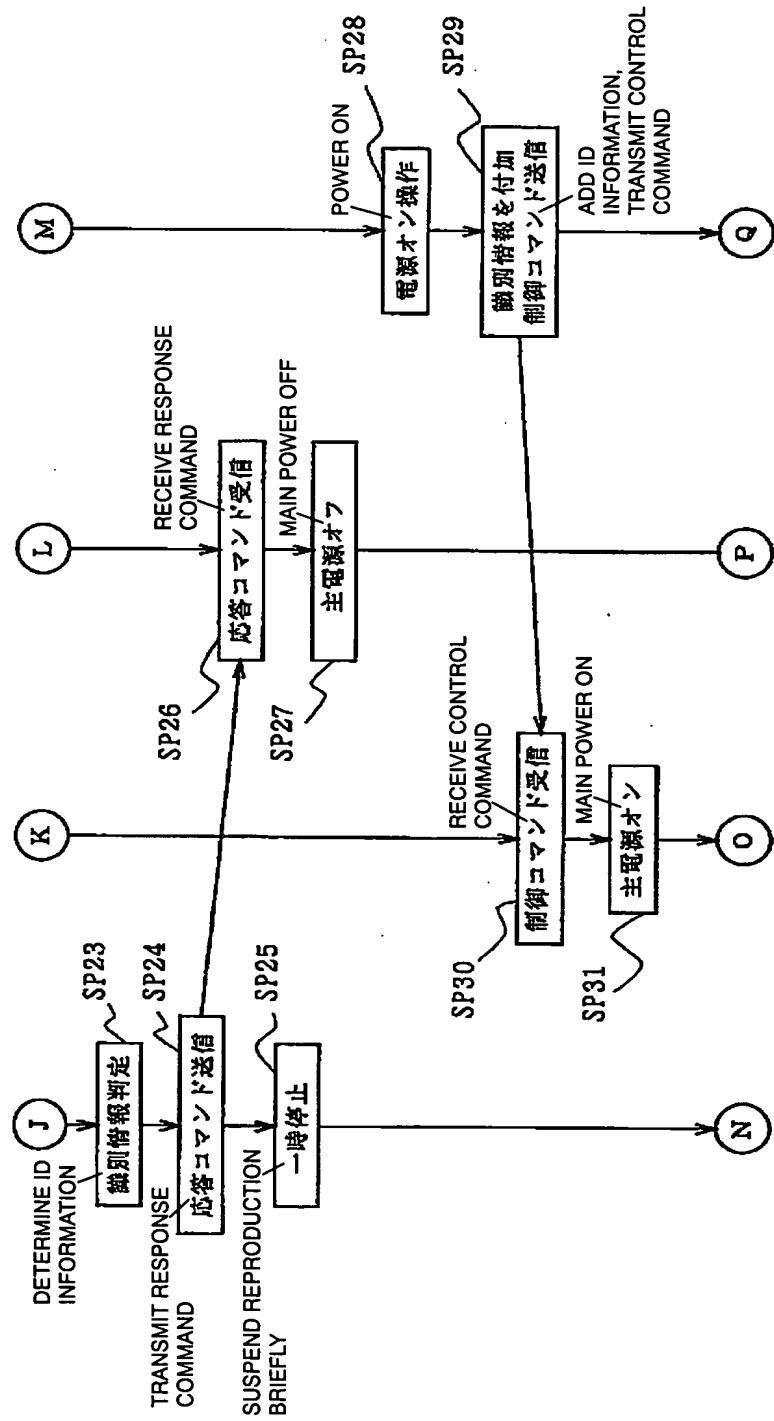
【図5】 [FIG. 5]



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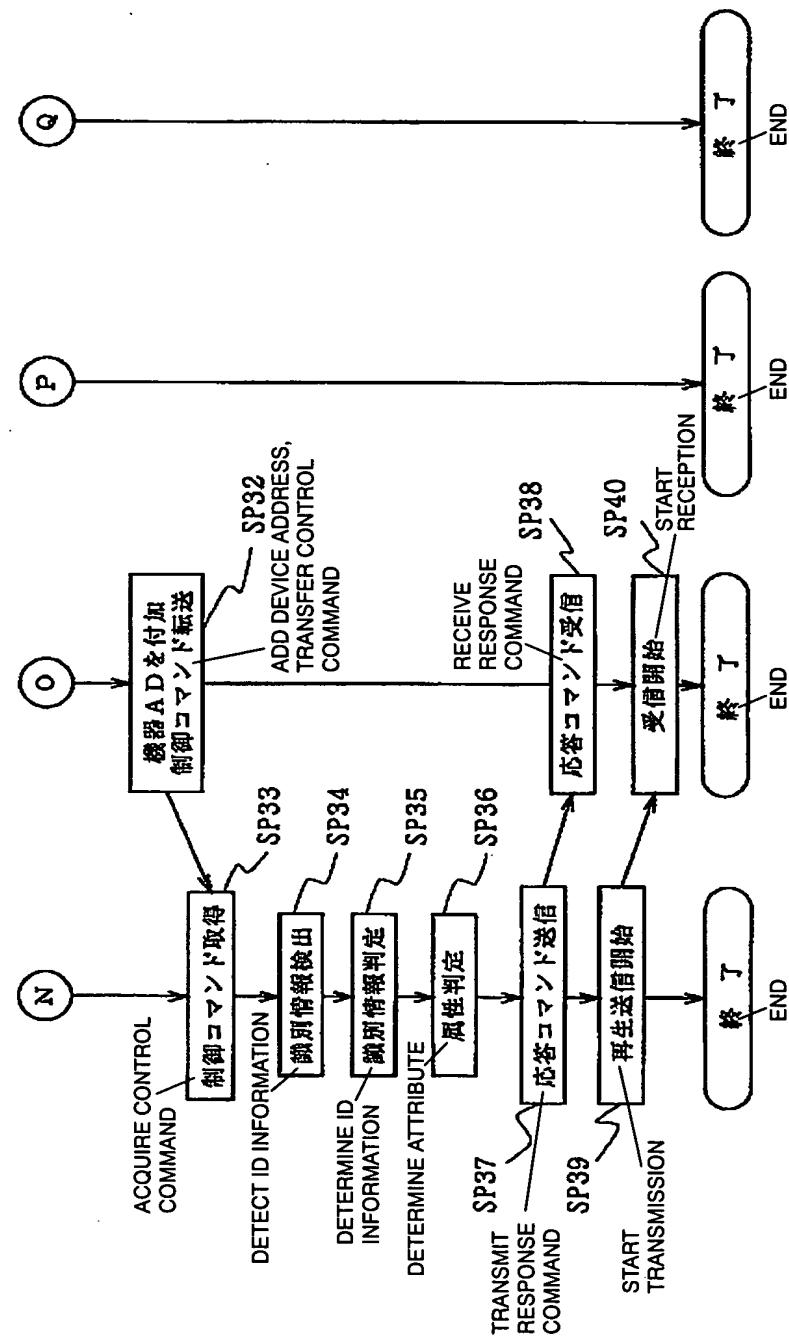
【図6】 [FIG. 6]



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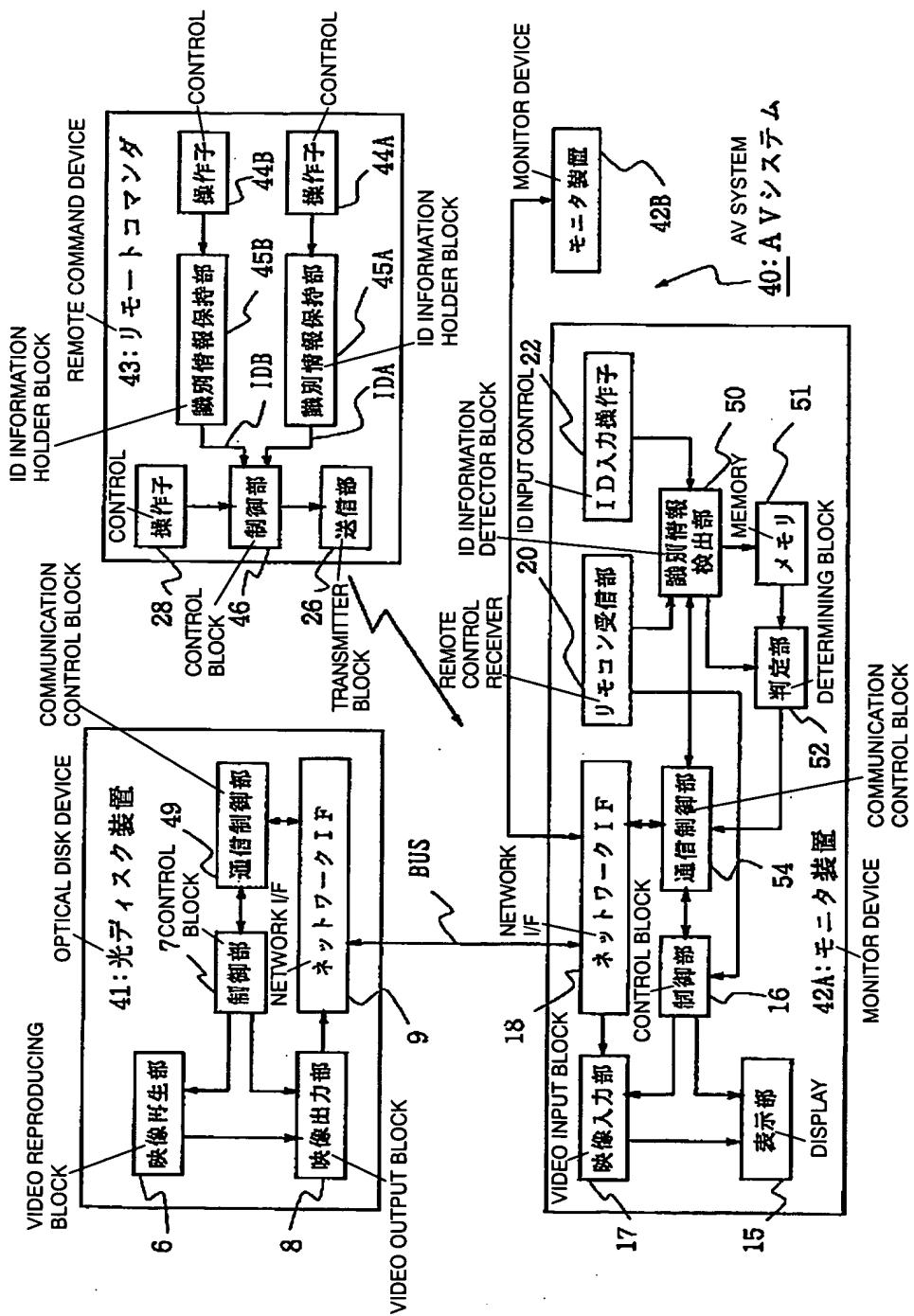
【図7】 [FIG. 7]



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【図8】 [FIG. 8]



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【図9】 [FIG. 9]

